MOISTURE & DENSITY TEST

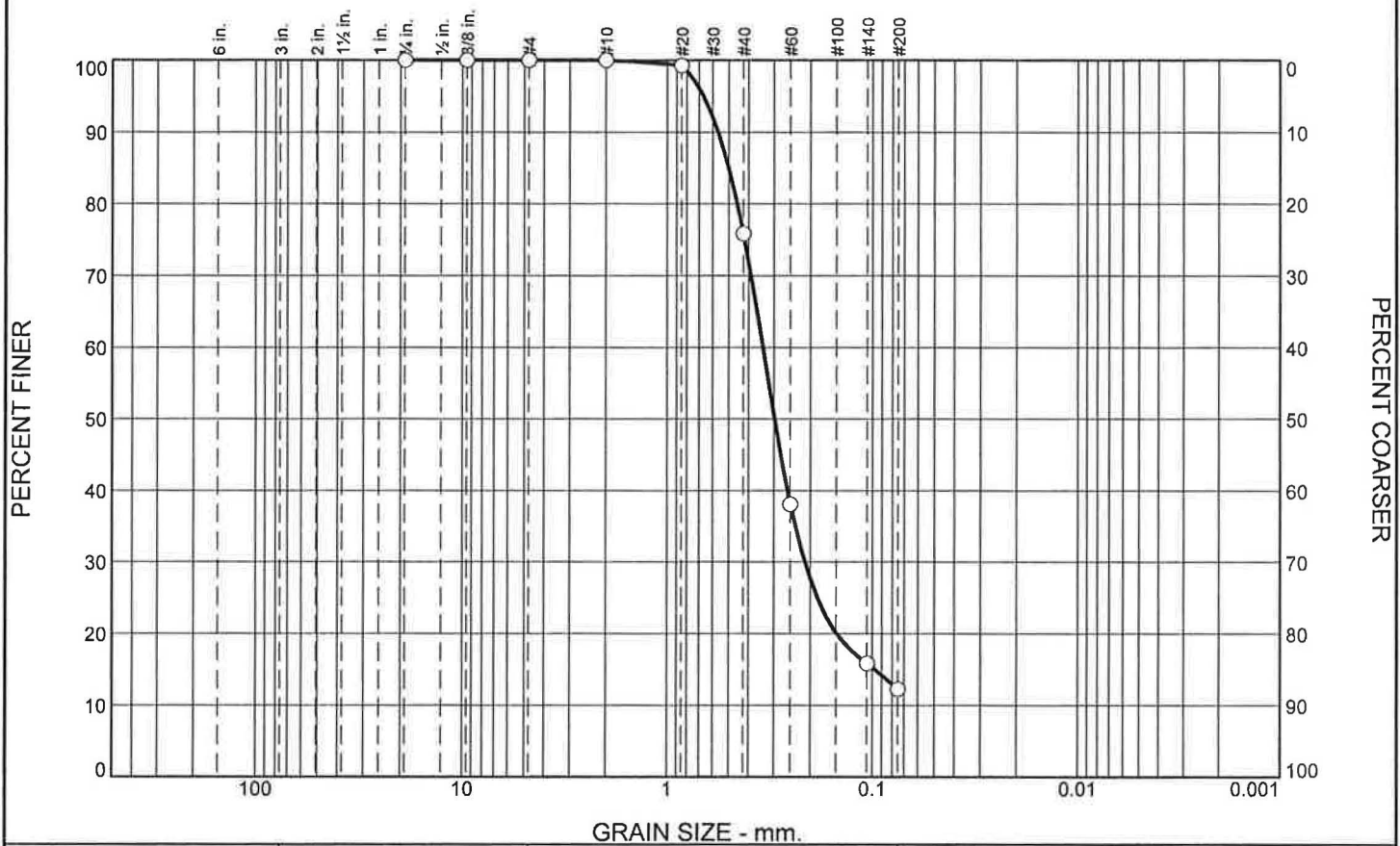Client : URS/ARUP/HMM JV   Project : California High Speed Train

ISI Lab No.: G-52573
Job no : 2636-001.0

Boring #	S0028R	S0028R	S0028R	S0028R	S0028R			
Sample #	SS03	MC06-2	MC22-2	MC26-2	MC30-2			
Depth (ft.)	16.0-16.5	30.5-31.0	105.5-106.0	125.5-126.0	145.5-146.0			
Soil type: (visual)	Grayish brown sand	Dark greenish gray sandy silt	Olive gray sandy silt	Light gray sand	Brown silty sand			
1. Date tested:	10/20/13	10/21/13	10/21/13	10/20/13	10/20/13			
2. Tested by:	JH	JH	JH	JH	JH			
3. Specimen height (in.)		5.79	5.98	5.91	5.67			
4. Wt. of specimen + tare (gm)		843.33	925.75	1099.35	889.56			
5. Tare wt. (gm)		0.00	0.00	213.18	0.00			
6. Diameter (in.)		2.42	2.43	2.43	2.43			
7. Wet wt. of soil + dish wt. (gm)	265.06	293.70	318.20	251.22	263.79			
8. Dry wt. of soil + dish wt. (gm)	230.02	245.87	270.57	219.22	230.73			
9. Wt. of dish (gm)	51.09	51.14	50.70	50.59	50.41			
10. Dish ID								
Wet Density (pcf)		120.5	127.1	123.1	128.8			
Dry Density (pcf)		96.8	104.4	103.4	108.8			
Moisture Content (%)	19.6	24.6	21.7	19.0	18.3			
Gs (Assumed)	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
Void Ratio		0.741	0.613	0.629	0.548			
Saturation (%)		89.5	95.4	81.5	90.3			

Additional data:

Wt. of dry soil + dish before washing (gm)								
Wt. of dry soil + dish after washing (gm)								
% Passing # 200 sieve								
USCS symbol								

Particle Size Distribution Report

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	24	64	12	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4	100		
3/8	100		
#4	100		
#10	100		
#20	99		
#40	76		
#60	38		
#140	16		
#200	12		

Soil Description

Brown sand

Atterberg Limits

PL=   LL=   PI=

Coefficients

D_{90}= 0.5658 D_{85}= 0.5017 D_{60}= 0.3401
D_{50}= 0.2980 D_{30}= 0.2129 D_{15}= 0.0973
D_{10}= C_u= C_c=

Classification

USCS=   AASHTO=

Remarks

F.M.=1.38

* (no specification provided)

Source of Sample: S0028R G-52573   **Depth:** 0.0-5.0
Sample Number: B01

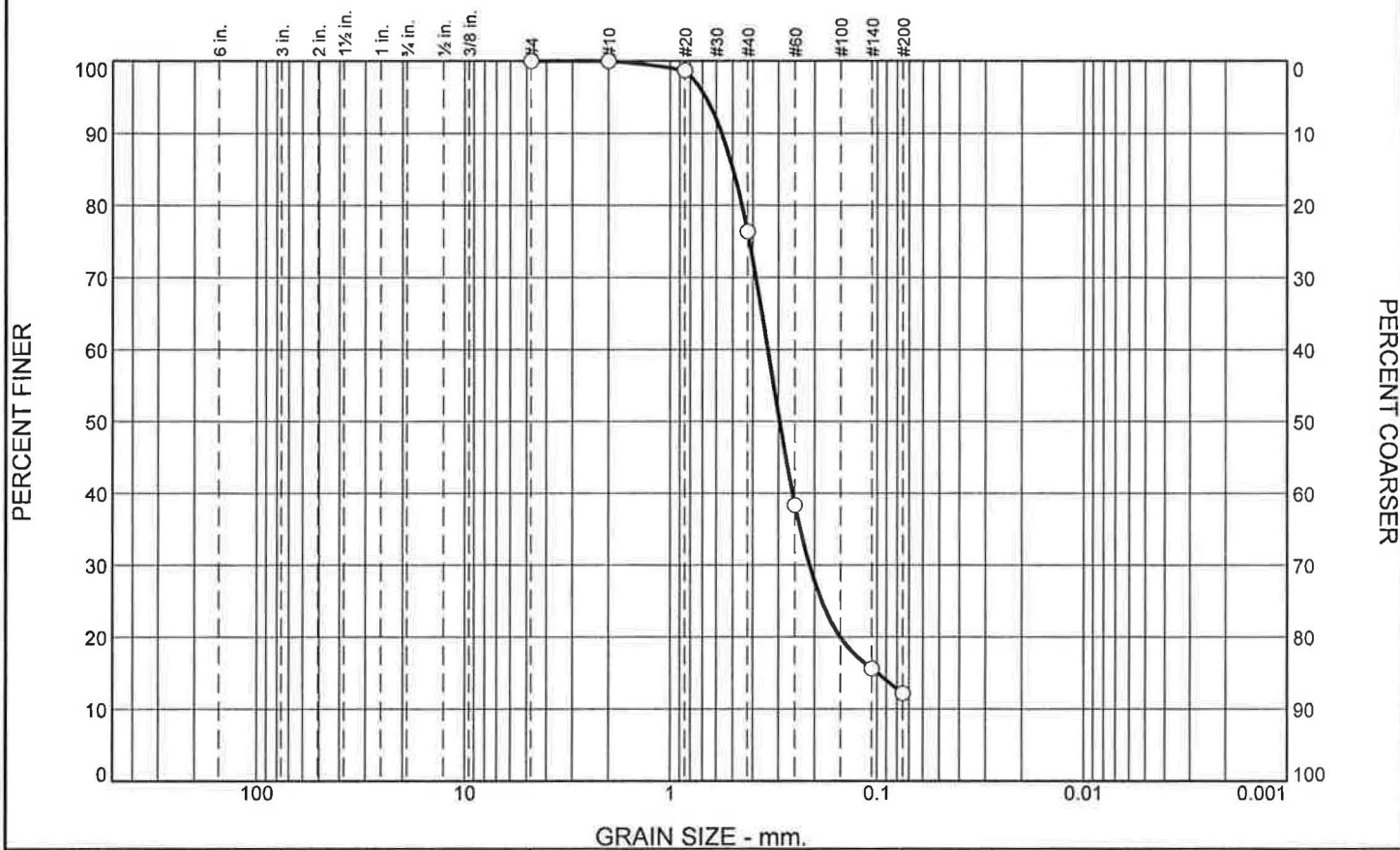**Date:** 09-13-13

Client: URS/ARUP/HMM JV
Project: California High Speed Train

Project No: 2636-001.0   **Figure**

Tested By: LL

Particle Size Distribution Report

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	24	64	12	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100		
#10	100		
#20	99		
#40	76		
#60	38		
#140	16		
#200	12		

Soil Description

Brown sand

Atterberg Limits

PL=   LL=   PI=

Coefficients

D_{90}= 0.5648 D_{85}= 0.4987 D_{60}= 0.3378
D_{50}= 0.2962 D_{30}= 0.2124 D_{15}= 0.0997
D_{10}= C_u= C_c=

Classification

USCS=   AASHTO=

Remarks

F.M.=1.38

* (no specification provided)

Source of Sample: S0028R G-52573   **Depth:** 5.0-10.0
Sample Number: B02

Date: 10-30-13

Client: URS/ARUP/HMM JV
Project: California High Speed Train

Project No: 2636-001.0   **Figure**

Tested By: PH   **Checked By:** JH

Particle Size Distribution Report
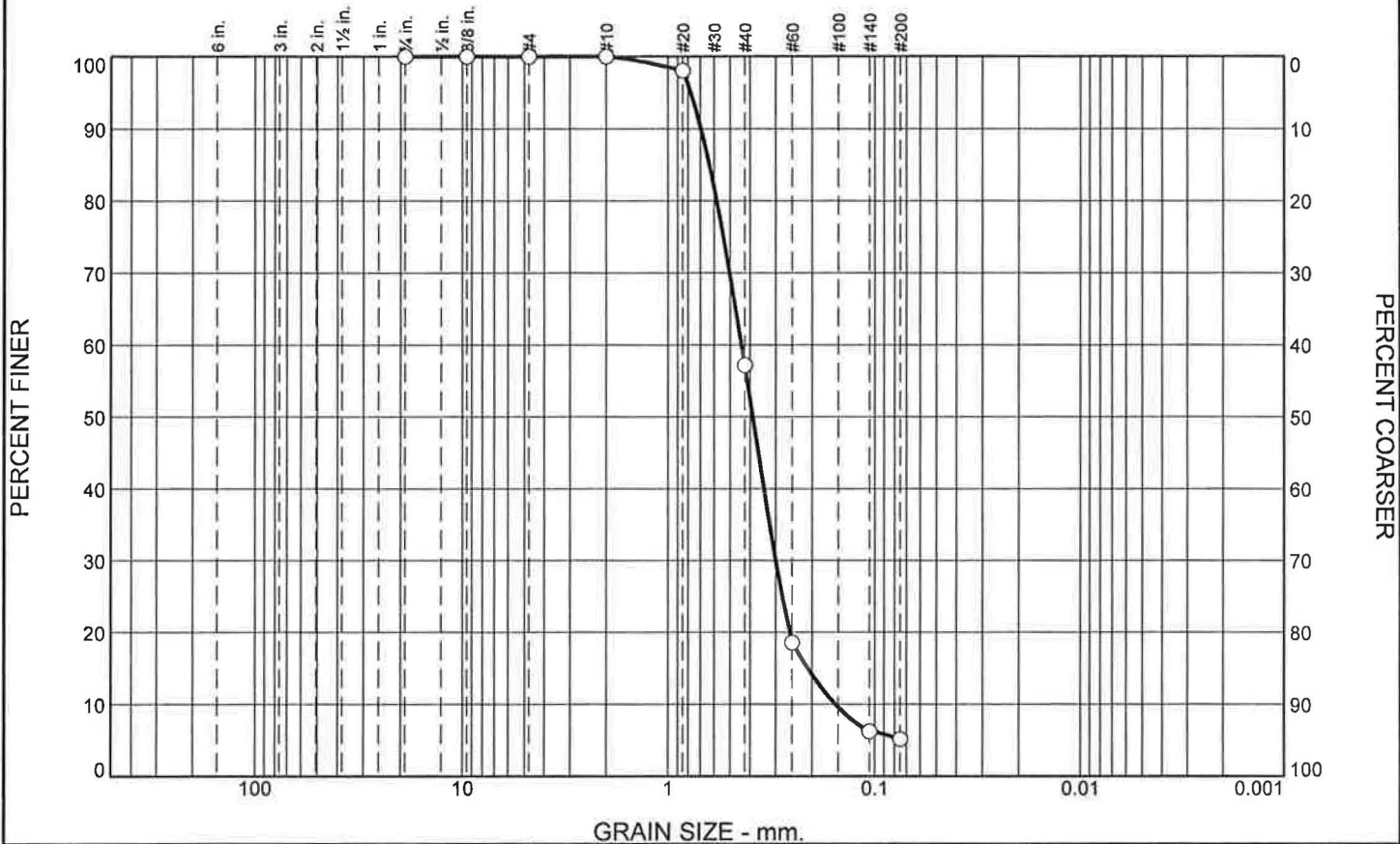
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	43	52	5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4	100		
3/8	100		
#4	100		
#10	100		
#20	98		
#40	57		
#60	19		
#140	6		
#200	5		

* (no specification provided)

Soil Description

Grayish brown sand

Atterberg Limits

PL=   LL=   PI=

Coefficients

$D_{90}= 0.6950$ $D_{85}= 0.6331$ $D_{60}= 0.4403$
$D_{50}= 0.3885$ $D_{30}= 0.3004$ $D_{15}= 0.2103$
$D_{10}= 0.1548$ $C_u= 2.84$ $C_c= 1.32$

Classification

USCS=   AASHTO=

Remarks

F.M.=1.80

Source of Sample: S0028R G-52573   **Depth:** 16.0-16.5
Sample Number: SS03
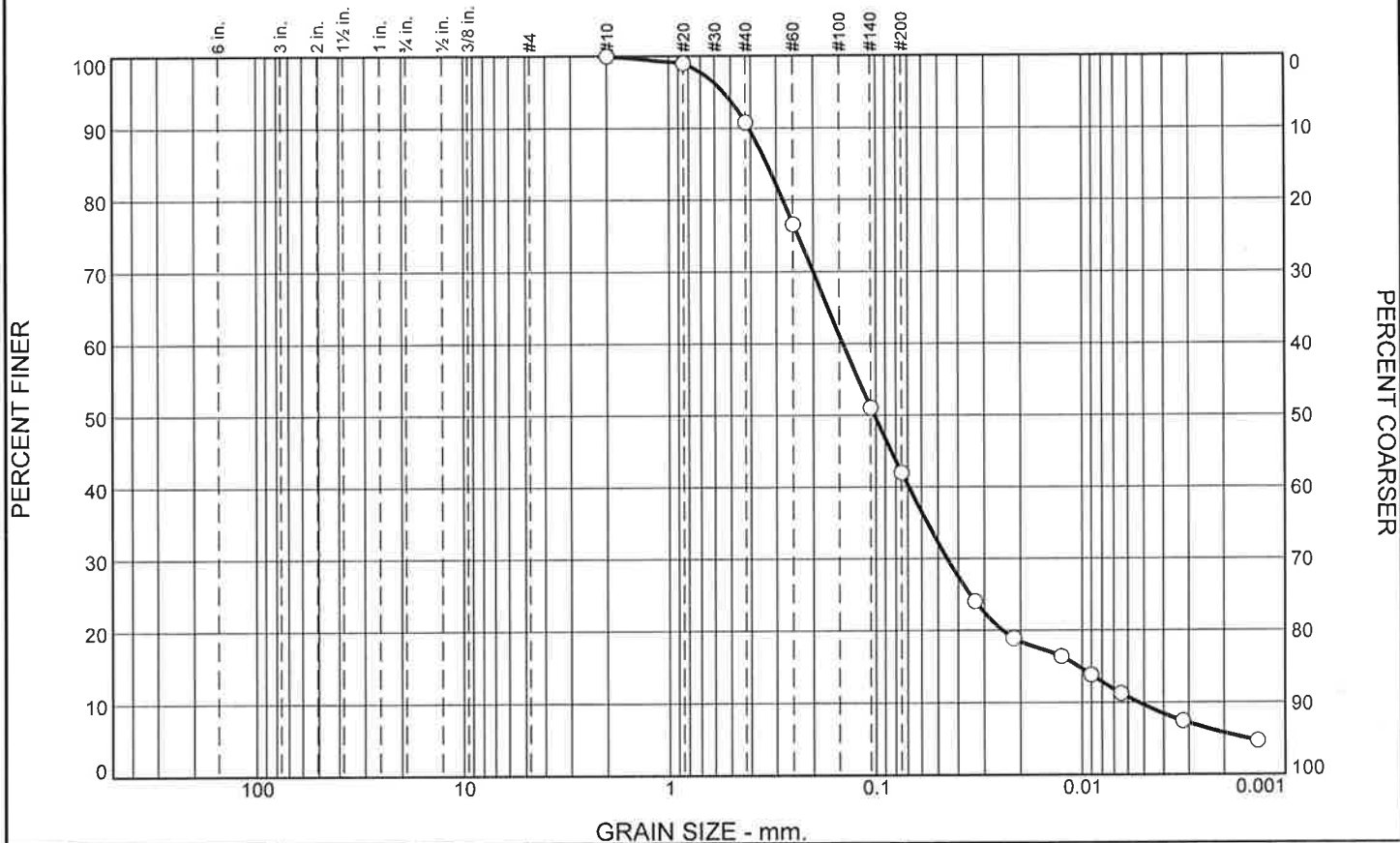
Date: 09-13-13

Client: URS/ARUP/HMM JV
Project: California High Speed Train

Project No: 2636-001.0   **Figure**

Tested By: JH

Particle Size Distribution Report

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	9	49	32	10

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100		
#20	99		
#40	91		
#60	77		
#140	51		
#200	42		
0.0333 mm.	24		
0.0216 mm.	19		
0.0126 mm.	16		
0.0090 mm.	14		
0.0065 mm.	11		
0.0032 mm.	7		
0.0014 mm.	5		

* (no specification provided)

Soil Description

Olive brown silty sand

Atterberg Limits

PL=   LL=   PI=

Coefficients

D_{90}= 0.4088 D_{85}= 0.3338 D_{60}= 0.1445
D_{50}= 0.1019 D_{30}= 0.0453 D_{15}= 0.0104
D_{10}= 0.0053 C_u= 27.25 C_c= 2.68

Classification

USCS=   AASHTO=

Remarks

F.M.=0.61

Source of Sample: S0028R G-52573   **Depth:** 25.0-26.5   **Date:** 1/17/14
Sample Number: SS05

Client: URS/ARUP/HMM JV
Project: California High Speed Train

Project No: 2636-001.0   **Figure**

Tested By: JH   **Checked By:** PH

Particle Size Distribution Report
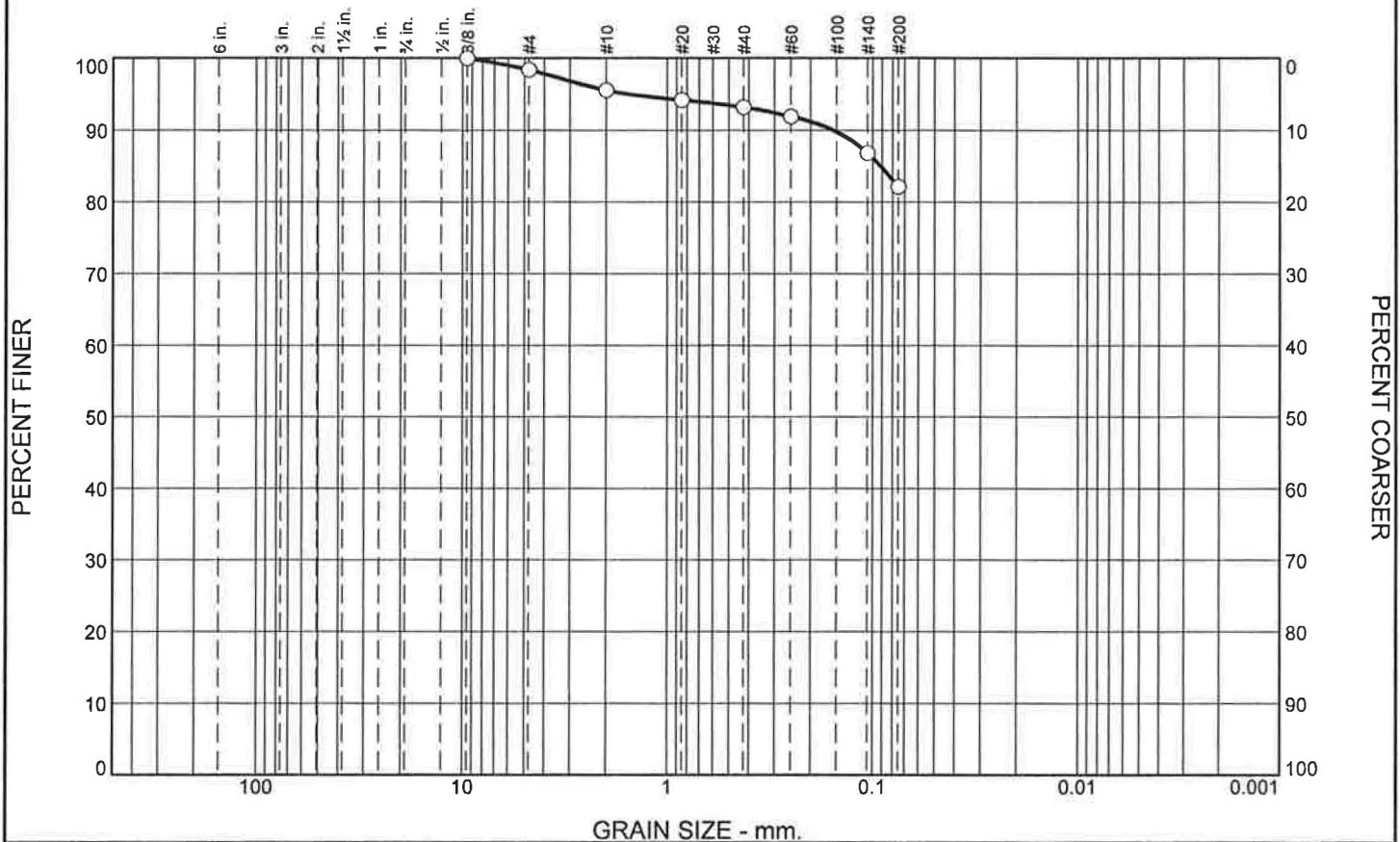
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	2	2	3	11	82	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8	100		
#4	98		
#10	96		
#20	94		
#40	93		
#60	92		
#140	87		
#200	82		

Soil Description

Dark greenish gray sandy silt

Atterberg Limits

PL=   LL=   PI=

Coefficients

D_{90}= 0.1539 D_{85}= 0.0914 D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS=   AASHTO=

Remarks

F.M.=0.35

* (no specification provided)

Source of Sample: S0028R G-52573   **Depth:** 30.5-31.0
Sample Number: MC06-2

Date: 09-13-13

Client: URS/ARUP/HMM JV
Project: California High Speed Train

Project No: 2636-001.0   **Figure**

Tested By: JH   **Checked By:** PH

Particle Size Distribution Report

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	13	74	13	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100		
#10	100		
#20	100		
#40	87		
#60	55		
#140	19		
#200	13		

Soil Description

Brown sand

Atterberg Limits

PL=   LL=   PI=

Coefficients

D_{90}= 0.4614 D_{85}= 0.4106 D_{60}= 0.2724
D_{50}= 0.2319 D_{30}= 0.1543 D_{15}= 0.0854
D_{10}= C_u= C_c=

Classification

USCS=   AASHTO=

Remarks

F.M.=1.08

* (no specification provided)

Source of Sample: S0028R G-52573   **Depth:** 56.0-56.5

Sample Number: SS11

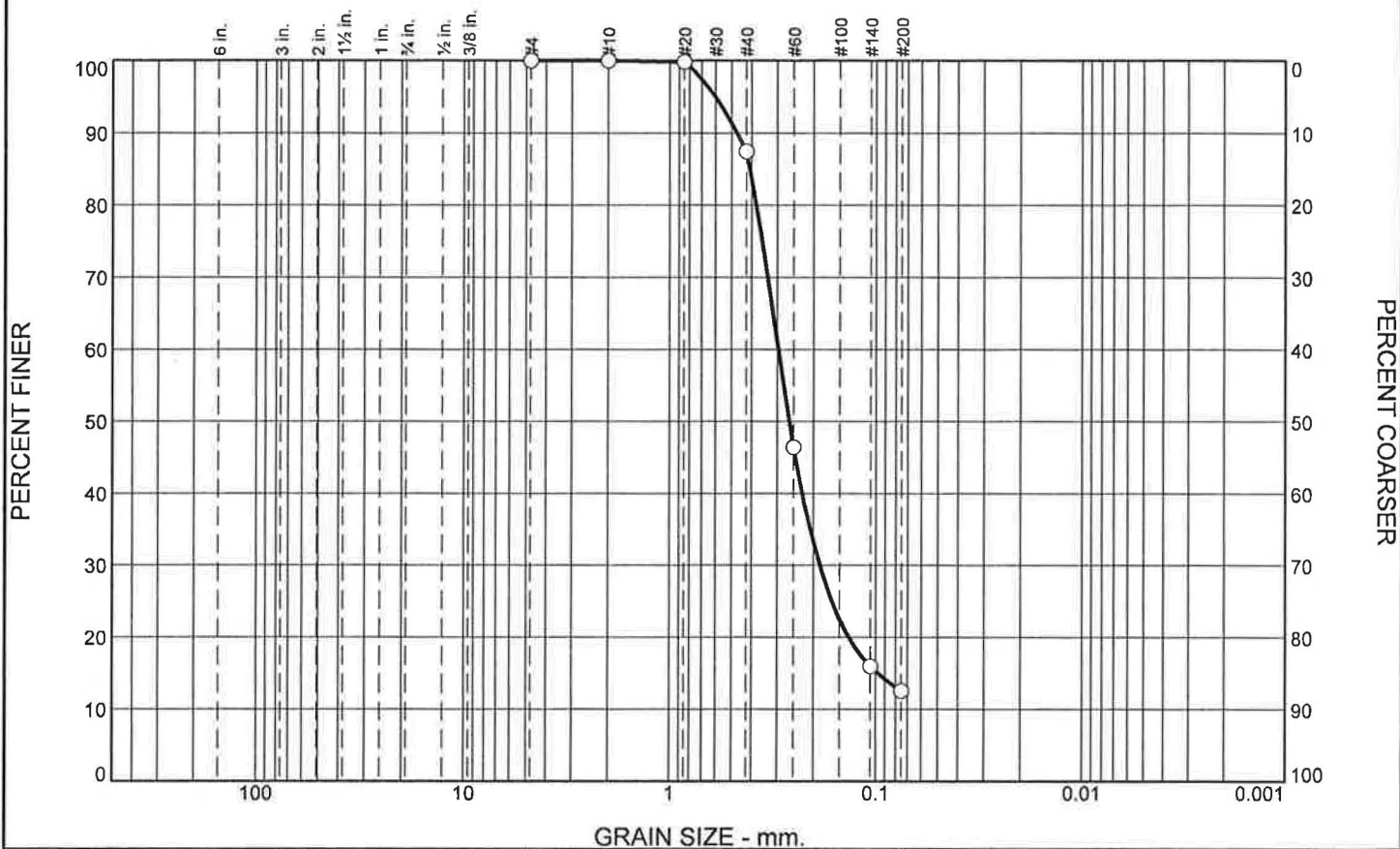**Date:** 09-13-13

Client: URS/ARUP/HMM JV

Project: California High Speed Train

Project No: 2636-001.0   **Figure**

Tested By: SB

Particle Size Distribution Report

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	13	74	13	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100		
#10	100		
#20	100		
#40	87		
#60	46		
#140	16		
#200	13		

* (no specification provided)

Soil Description

Brown sand

Atterberg Limits

PL=   LL=   PI=

Coefficients

D_{90}= 0.4716 D_{85}= 0.4082 D_{60}= 0.2967
D_{50}= 0.2623 D_{30}= 0.1870 D_{15}= 0.0973
D_{10}= C_u= C_c=

Classification

USCS=   AASHTO=

Remarks

F.M.=1.22

Source of Sample: S0028R G-52573   **Depth:** 66.0-66.5
Sample Number: SS13
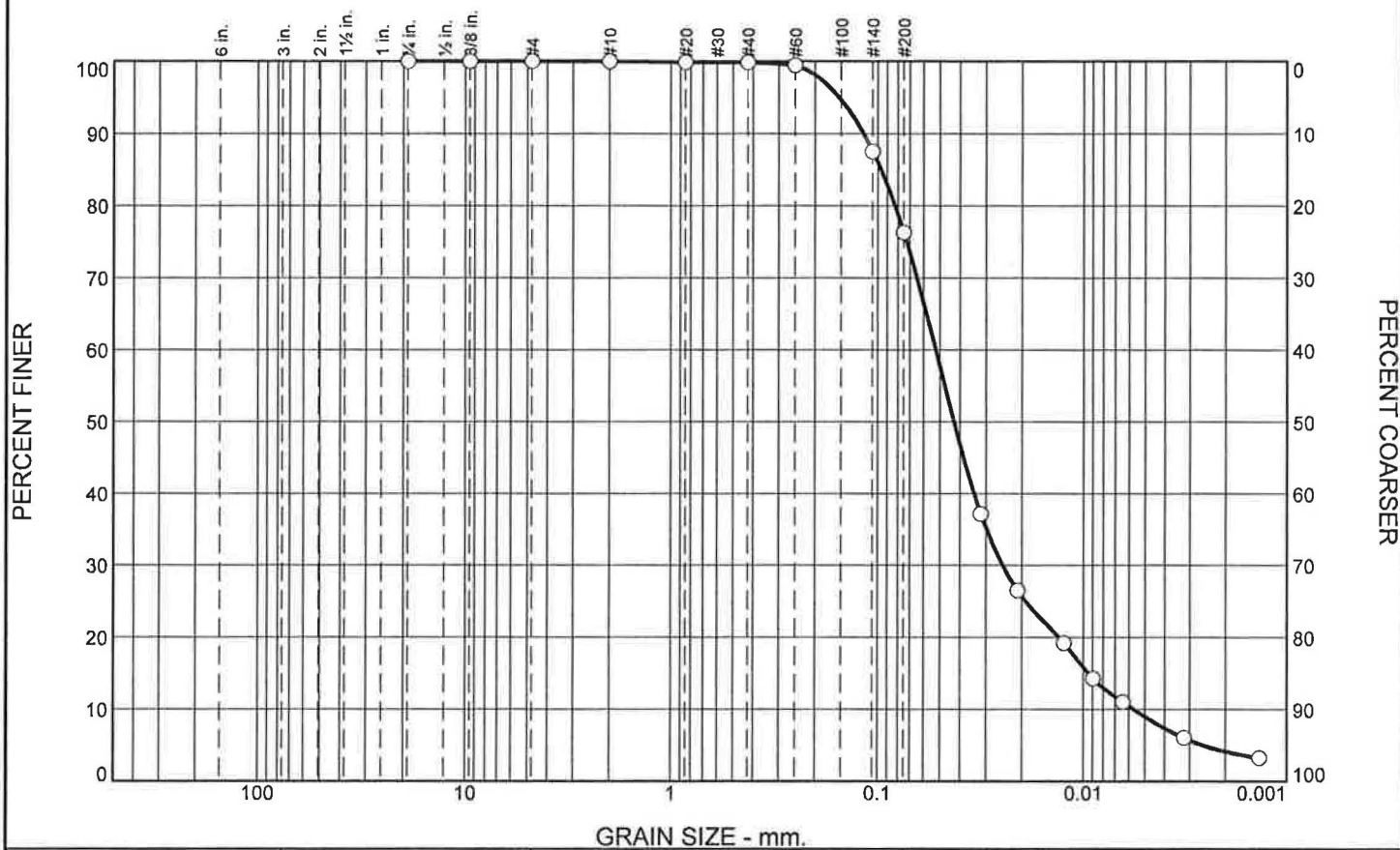
Date: 09-13-13

Client: URS/ARUP/HMM JV
Project: California High Speed Train

Project No: 2636-001.0   **Figure**

Tested By: SB

Particle Size Distribution Report

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	0	24	67	9

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4	100		
3/8	100		
#4	100		
#10	100		
#20	100		
#40	100		
#60	99		
#140	88		
#200	76		
0.0318 mm.	37		
0.0210 mm.	27		
0.0125 mm.	19		
0.0090 mm.	14		
0.0064 mm.	11		
0.0032 mm.	6		
0.0014 mm.	3		

* (no specification provided)

Soil Description

Olive gray sandy silt

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.1174 D_{85}= 0.0966 D_{60}= 0.0526
D_{50}= 0.0429 D_{30}= 0.0249 D_{15}= 0.0095
D_{10}= 0.0057 C_u= 9.28 C_c= 2.08

Classification

USCS= AASHTO=

Remarks

F.M.=0.06

Source of Sample: S0028R G-52573   **Depth:** 81.0-81.5
Sample Number: SS17
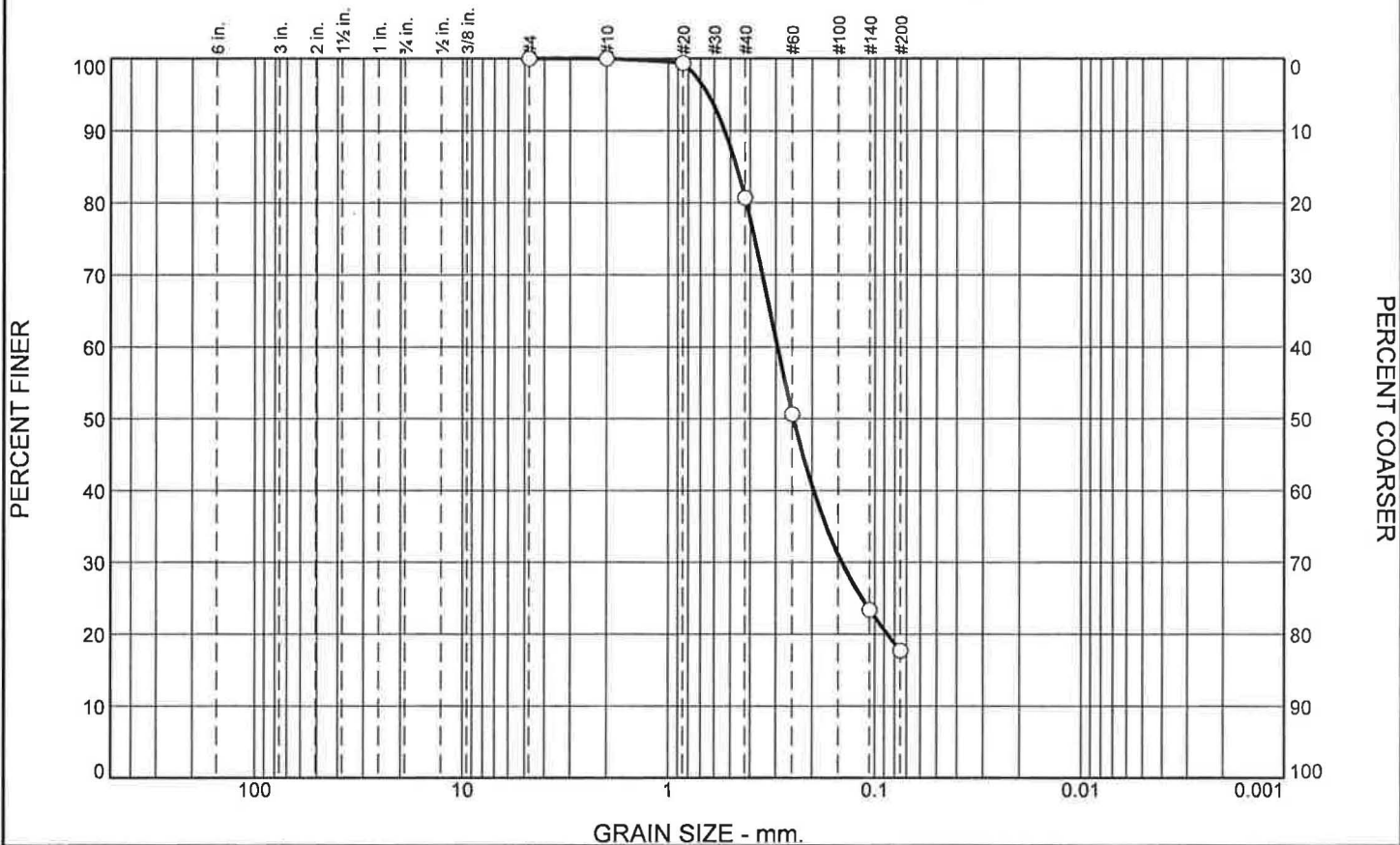
Date: 09-13-13

Client: URS/ARUP/HMM JV
Project: California High Speed Train

Project No: 2636-001.0   **Figure**

Tested By: PH

Particle Size Distribution Report

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	19	63	18	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100		
#10	100		
#20	99		
#40	81		
#60	51		
#140	23		
#200	18		

* (no specification provided)

Soil Description

Gray brown sand

Atterberg Limits

PL=　　　　LL=　　　　PI=

Coefficients

$D_{90}= 0.5342$　　$D_{85}= 0.4670$　　$D_{60}= 0.2951$
$D_{50}= 0.2468$　　$D_{30}= 0.1441$　　$D_{15}=$
$D_{10}=$　　　　$C_u=$　　　　$C_c=$

Classification

USCS=　　　　　　AASHTO=

Remarks

F.M.=1.15

Source of Sample: S0028R G-52573　　**Depth:** 91.0-91.5
Sample Number: SS19

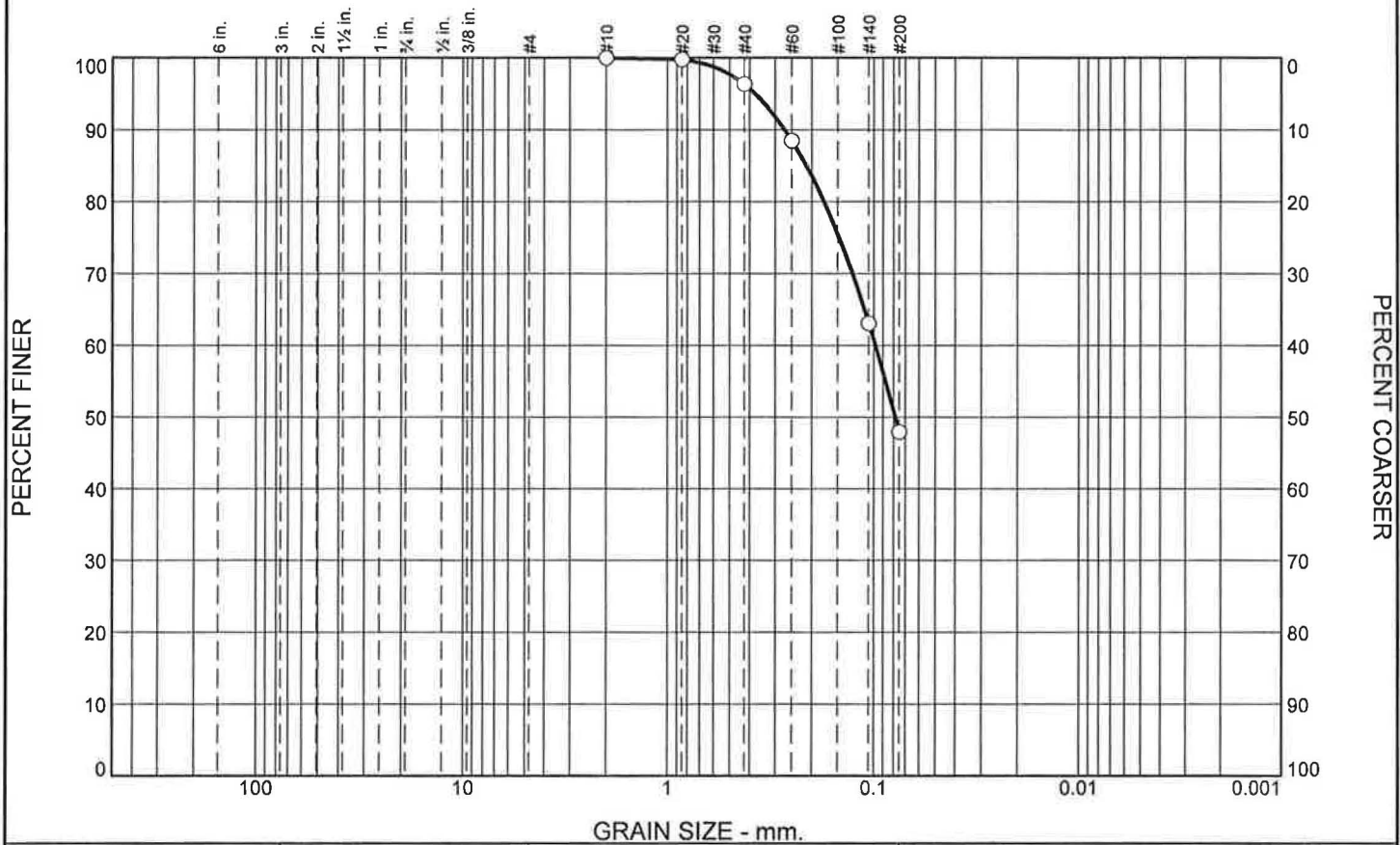**Date:** 09-13-13

Client: URS/ARUP/HMM JV
Project: California High Speed Train

Project No: 2636-001.0　　　**Figure**

Tested By: SB

Particle Size Distribution Report

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	4	48	48	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100		
#20	100		
#40	96		
#60	88		
#140	63		
#200	48		

Soil Description

Olive gray sandy silt

Atterberg Limits

PL=   LL=   PI=

Coefficients

$D_{90}= 0.2707$ $D_{85}= 0.2129$ $D_{60}= 0.0984$
$D_{50}= 0.0785$ $D_{30}=$ $D_{15}=$
$D_{10}=$ $C_u=$ $C_c=$

Classification

USCS=   AASHTO=

Remarks

F.M.=0.34

* (no specification provided)

Source of Sample: S0028R G-52573   **Depth:** 105.5-106.0
Sample Number: MC22-2

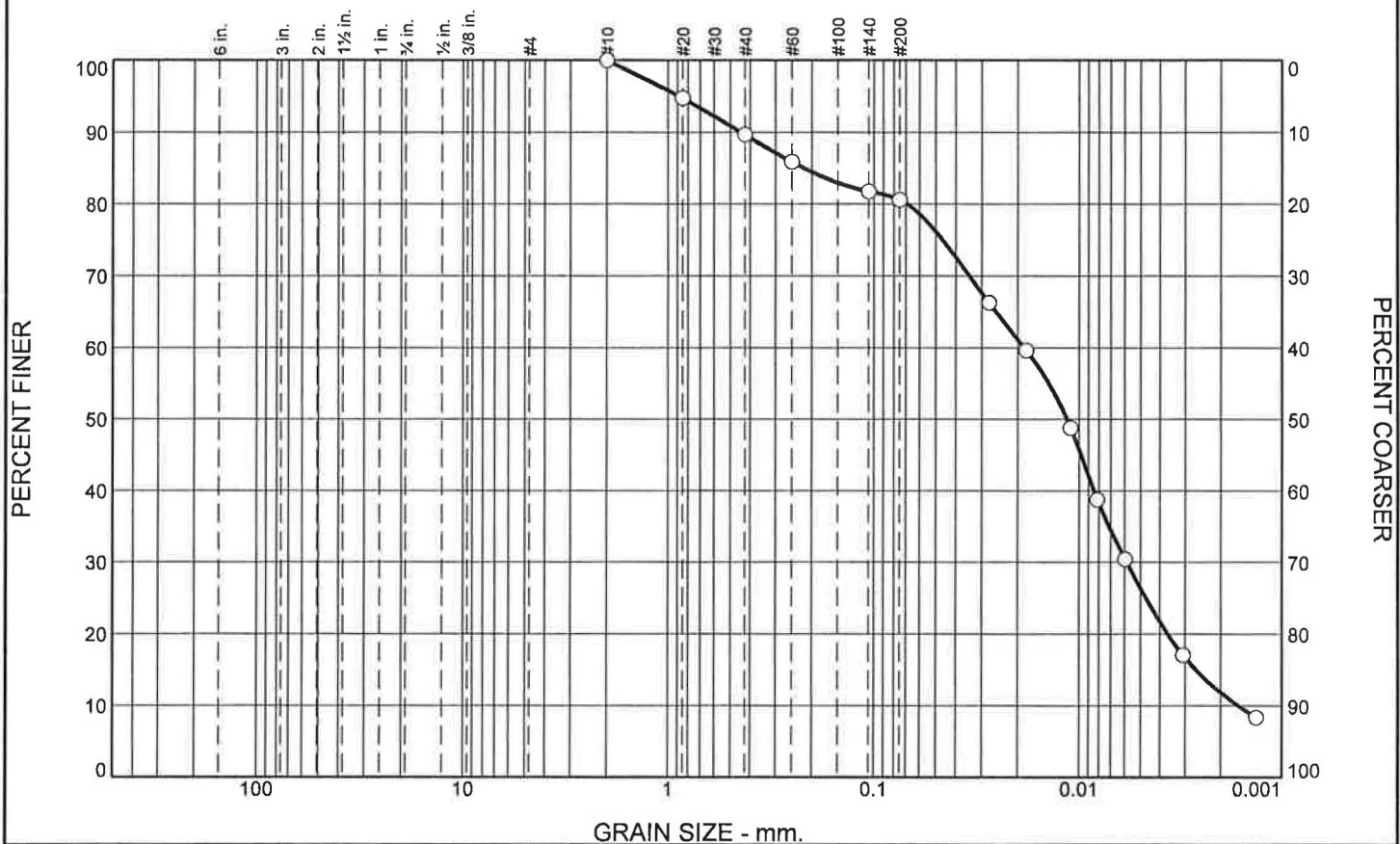**Date:** 09-13-13

Client: URS/ARUP/HMM JV
Project: California High Speed Train

Project No: 2636-001.0   **Figure**

Tested By: JH

Particle Size Distribution Report

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	10	9	55	26

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100		
#20	95		
#40	90		
#60	86		
#140	82		
#200	81		
0.0277 mm.	66		
0.0182 mm.	60		
0.0110 mm.	49		
0.0082 mm.	39		
0.0060 mm.	30		
0.0031 mm.	17		
0.0013 mm.	8		

* (no specification provided)

Soil Description
Gray brown clayey silt

Atterberg Limits
PL=   LL=   PI=

Coefficients

D_{90}= 0.4437 D_{85}= 0.2171 D_{60}= 0.0186
D_{50}= 0.0115 D_{30}= 0.0059 D_{15}= 0.0027
D_{10}= 0.0016 C_u= 11.36 C_c= 1.13

Classification
USCS=   AASHTO=

Remarks
F.M.=0.41

Source of Sample: S0028R G-52573   **Depth:** 141.0-141.5
Sample Number: SS29

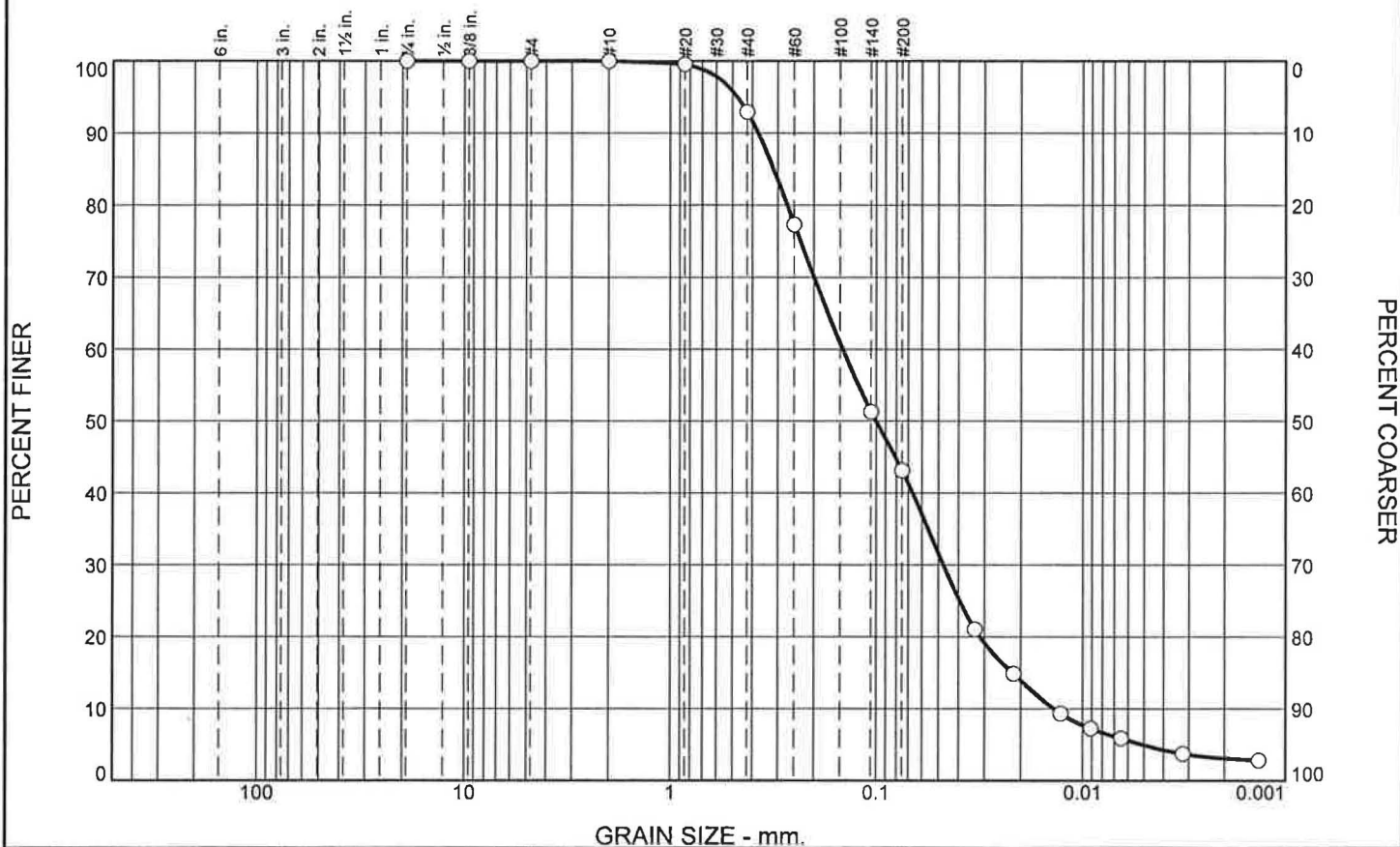**Date:** 09-13-13

Client: URS/ARUP/HMM JV
Project: California High Speed Train

Project No: 2636-001.0   **Figure**

Tested By: PH

Particle Size Distribution Report

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	7	50	38	5

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4	100		
3/8	100		
#4	100		
#10	100		
#20	100		
#40	93		
#60	77		
#140	51		
#200	43		
0.0334 mm.	21		
0.0217 mm.	15		
0.0128 mm.	9		
0.0091 mm.	7		
0.0065 mm.	6		
0.0032 mm.	4		
0.0014 mm.	3		

* (no specification provided)

Soil Description

Brown silty sand

Atterberg Limits

PL=   LL=   PI=

Coefficients

D_{90}= 0.3752 D_{85}= 0.3157 D_{60}= 0.1458
D_{50}= 0.1004 D_{30}= 0.0475 D_{15}= 0.0219
D_{10}= 0.0138 C_u= 10.54 C_c= 1.12

Classification

USCS=   AASHTO=

Remarks

F.M.=0.58

Source of Sample: S0028R G-52573   **Depth:** 145.5-146.0
Sample Number: MC30-2

Date: 09-13-13

Client: URS/ARUP/HMM JV
Project: California High Speed Train

Project No: 2636-001.0   **Figure**

Tested By: PH

UNCONSOLIDATED UNDRAINED COMPRESSION TEST - ASTM D2850

Client : URS/ARUP/HMM JV
Project : California High Speed Train
Job # : 2636-001.0
Boring # S0028R
Sample # : MC04-1
Depth (ft) : 21
Date tested : 10/26/13
Soil : Olive gray sandy silt

Data Reduction:

Dial factor = 1.0 in/unit
Load factor = 1.0 lb/unit

Specimen:			
Total wt. =	783.5	gms	
Ht. =	5.430	in	
Ave dia. =	2.380	in	
Area =	4.451	sq.in	
Volume =	396.0	c.c.	
Shearing rate =	0.03	inch/min	
Shearing rate =	0.5	%/min	
Gs (assumed) =	2.70		

Test Report:
Void ratio = 0.701
Ht/Dia ratio = 2.28
Moisture = 24.6 %
Total density = 123.4 pcf
Dry density = 99.1 pcf
Saturation = 94.9 %
Chamber pressure = 3600 psf
Max. deviator stress = 1826 psf
Strain @ failure = 4.16 %

Dial Read.	Load Read.	Axial Strain (%)	Deviator Stress (psf)
-0.002		0.00	0.0
0.003	-10.3	0.08	-333.1
0.005	-10.3	0.13	-332.9
0.008	-10.3	0.19	-332.8
0.011	-1.2	0.24	-38.5
0.012	0.1	0.26	1.7
0.015	2.5	0.31	81.8
0.018	4.9	0.36	156.5
0.021	6.7	0.42	214.5
0.023	6.7	0.47	214.4
0.026	8.9	0.52	288.1
0.029	9.9	0.56	317.1
0.032	10.6	0.62	339.9
0.034	11.2	0.67	360.8
0.037	12.2	0.72	390.4
0.040	12.6	0.77	404.7
0.043	13.2	0.82	423.1
0.045	13.9	0.87	446.7
0.048	14.5	0.93	466.0
0.051	15.0	0.98	480.9
0.054	16.1	1.03	514.0
0.061	17.4	1.15	556.6
0.071	20.5	1.35	655.2
0.082	23.3	1.55	743.7
0.093	26.9	1.75	853.8
0.104	30.5	1.95	968.5
0.115	34.3	2.15	1086.5
0.126	37.3	2.35	1179.4
0.137	41.3	2.56	1302.9
0.148	44.4	2.76	1397.3
0.159	48.0	2.96	1507.2
0.170	50.6	3.16	1585.4
0.180	53.6	3.36	1677.1
0.191	56.0	3.56	1748.8
0.202	57.9	3.76	1801.6
0.213	58.7	3.96	1822.9
0.224	58.9	4.16	1825.6
0.235	57.9	4.36	1791.8
0.246	55.0	4.56	1698.6
0.257	48.3	4.76	1489.2
0.268	41.6	4.96	1278.7
0.287	32.0	5.32	980.3
0.314	15.6	5.82	476.1
0.341	8.2	6.32	248.8
0.364	7.2	6.74	218.6

INSPECTION SERVICES, INC. BERKELEY, CA
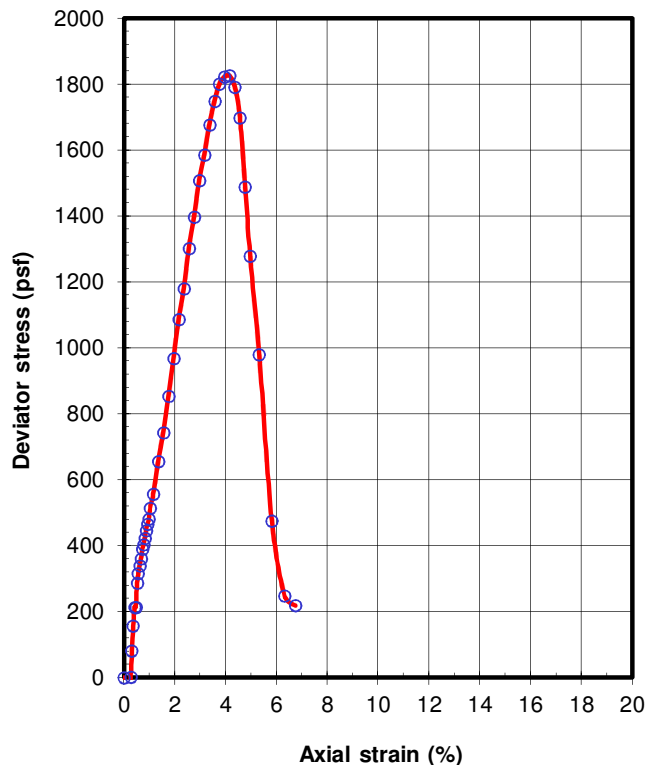
S0028R
MC04-1
21-21.5'
UU

S0028R
MC04-1
21-21.5'
UU

S0028R
MC04-1
21-21.5'
UU

S0028R
MC04-1
21-21.5'
UU

LIQUID AND PLASTIC LIMITS TEST REPORT

Dashed line indicates the approximate
upper limit boundary for natural soils

(Plasticity chart: PLASTICITY INDEX vs LIQUID LIMIT, with regions labeled CL or OL, CH or OH, ML or OL, MH or OH)

(Lower chart: WATER CONTENT vs NUMBER OF BLOWS)
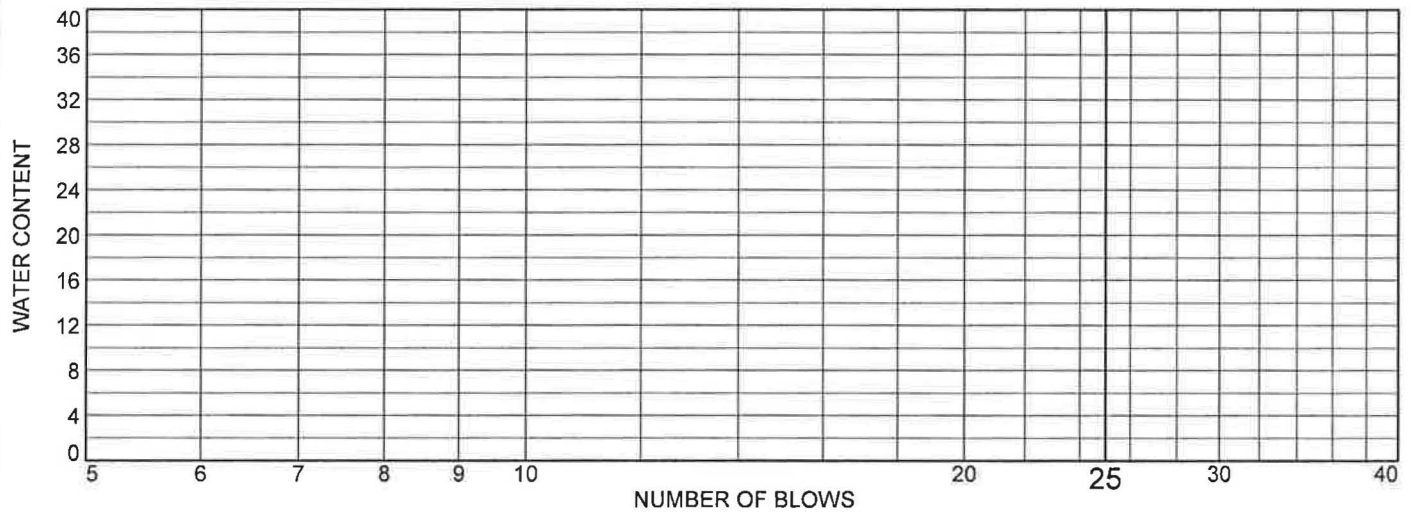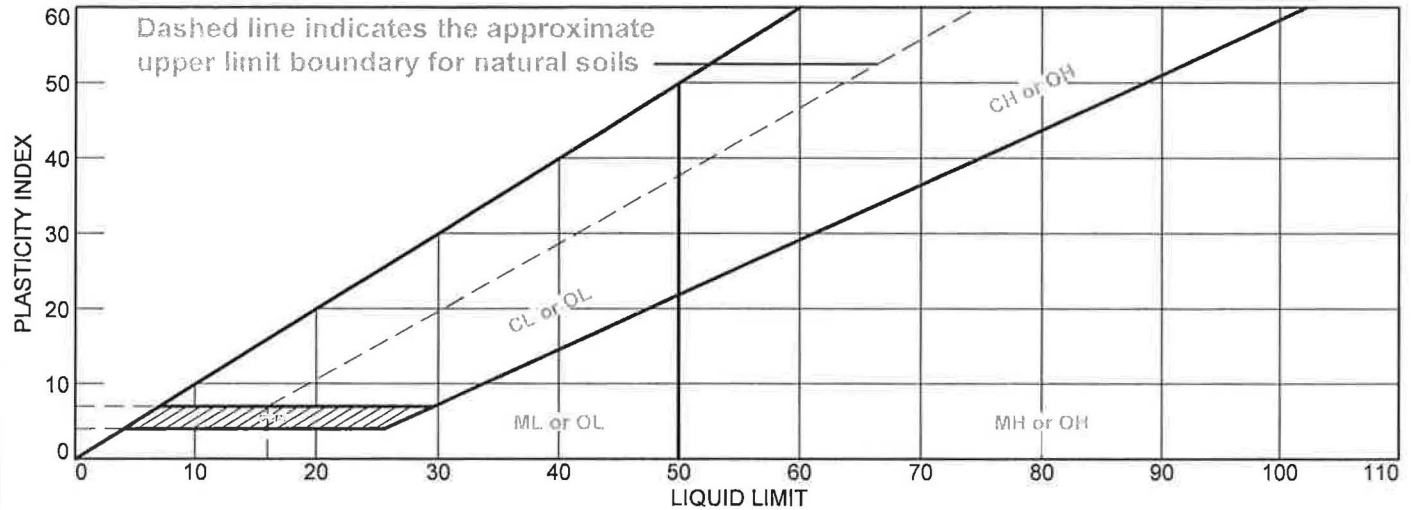
MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
Olive gray sandy silt	NP	NP	NP			

Project No. 2636-001.0   **Client:** URS/ARUP/HMM JV

Project: California High Speed Train

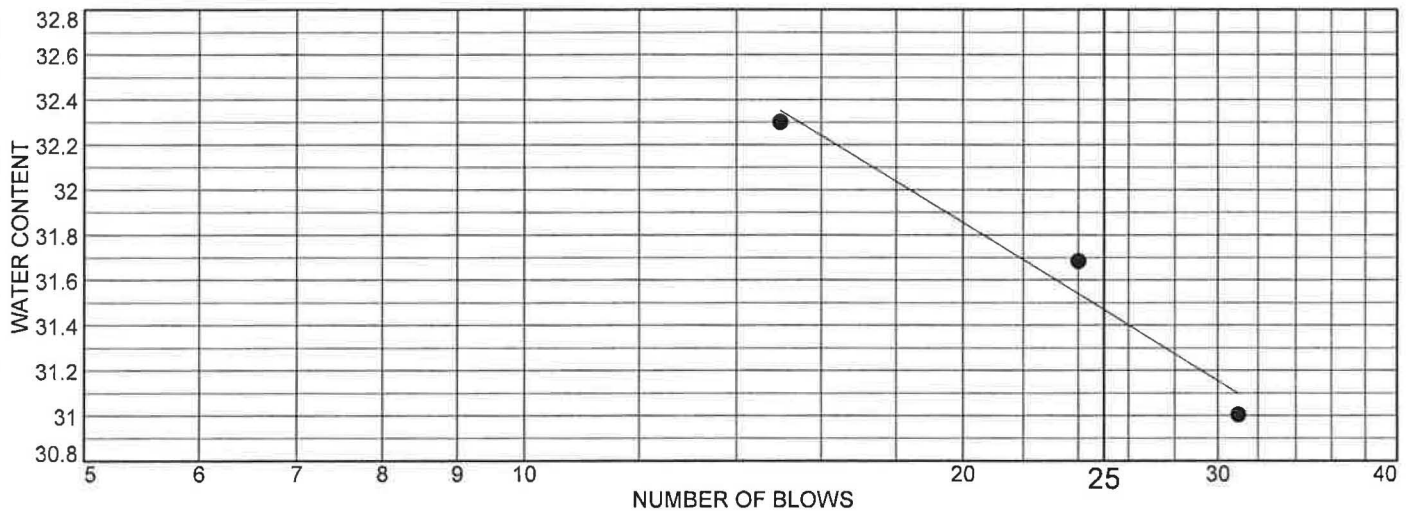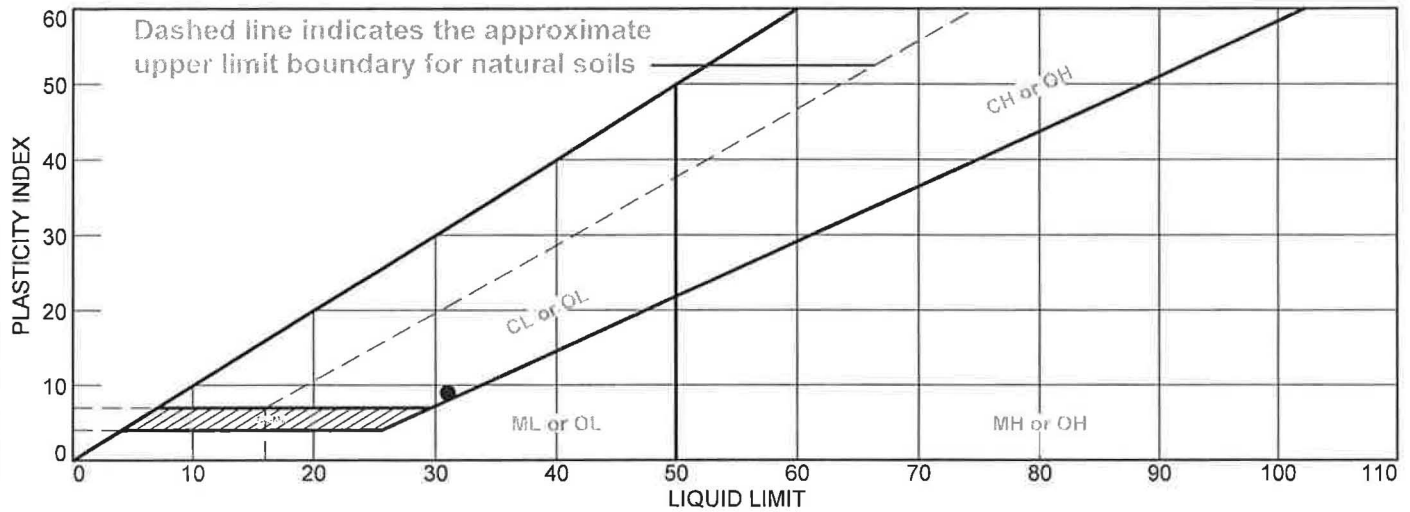**Source:** S-0028R G-52573   **Depth:** 21.0-21.5   **Sample No.:** MC04-1

Remarks:

Figure

Tested By: PH   **Checked By:** JH

LIQUID AND PLASTIC LIMITS TEST REPORT

Plasticity chart (Plasticity Index vs Liquid Limit):
- Dashed line indicates the approximate upper limit boundary for natural soils
- Regions labeled: CH or OH, CL or OL, ML or OL, MH or OH

Flow curve (Water Content vs Number of Blows)

MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
Olive brown silty clay	31	22	9			

Project No. 2636-001.0   **Client:** URS/ARUP/HMM JV

Project: California High Speed Train

● **Source:** S-0028R G-52573   **Depth:** 36.0-36.5   **Sample No.:** SS07

Remarks:

Figure

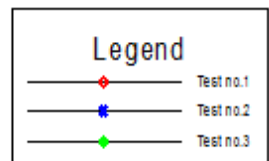**Tested By:** JH   **Checked By:** PH
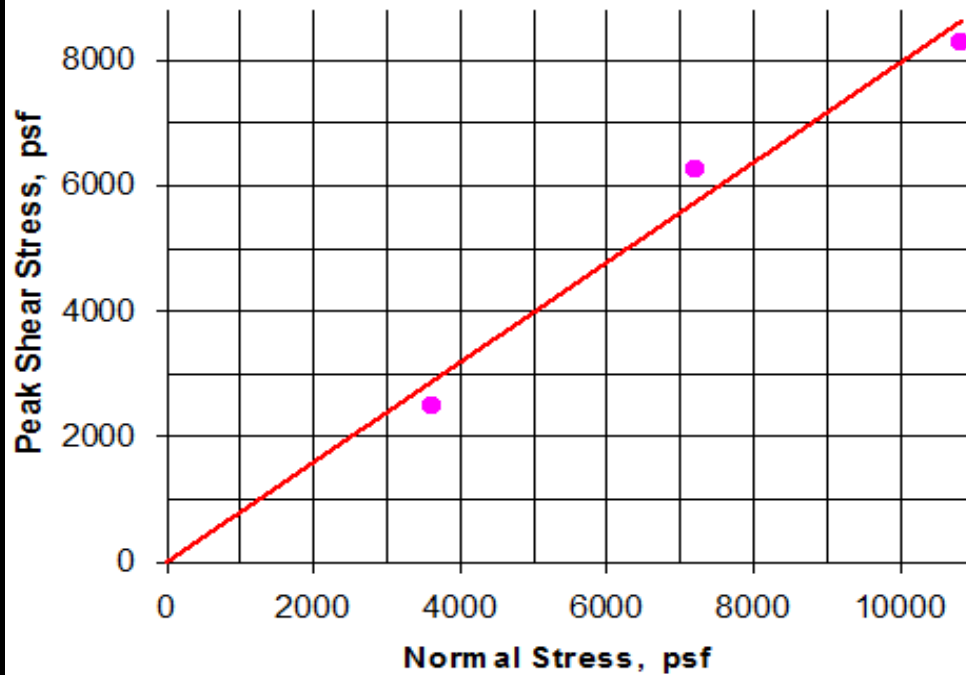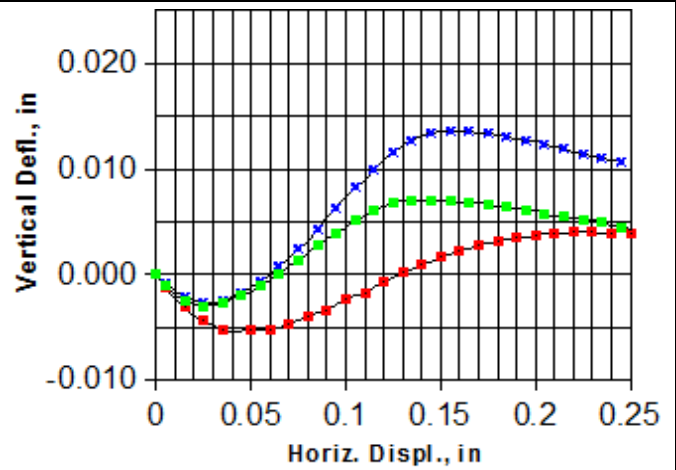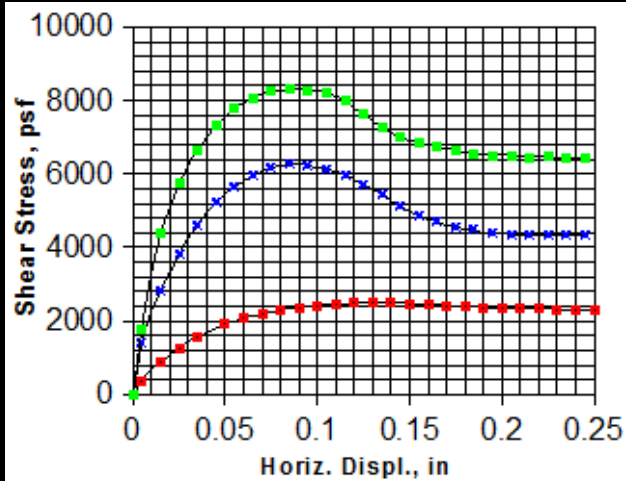
Direct Shear Moisture and Density Laboratory Results

wet density (pcf) =   115.5

dry density (pcf) =   102.8

moisture (%) =   12.3

Client:	**URS/ARUP/HMM JV**	Boring #:	**S0028R**	Sample #:	**MC12-2**
Project:	**California High Speed Train**	Depth (ft):	**60.5-61**		
Project #:	**2636-001.0**	Soil:	**Light olive brown sand**		

TEST REPORT: Direct shear - inundated, consolidated, & drained test

Inspection Services, Inc.

Plate no: _____

Shear Stress, psf

Horiz. Displ., in
0   0.05   0.1   0.15   0.2   0.25

Vertical Defl., in

Horiz. Displ., in
0   0.05   0.1   0.15   0.2   0.25

Peak Shear Stress, psf

Normal Stress, psf
0   2000   4000   6000   8000   10000

Legend

- Test no.1
- Test no.2
- Test no.3

Results

C = 0 psf
phi = 39 deg.

Gs = 2.70
Type = undisturbed

Test no.	SigN psf	Peak Shear str., psf	Displ. in.	Strain Rate in./hr	Initial MC %	Initial DD pcf	Initial Sat. %	Initial Void Ratio	Initial Ht. in.	Initial Dia. in.	Final MC %	Final DD pcf	Final Sat. %	Final Void Ratio	Final Ht. in.
1	3600	2508		0.18	11.9	87.2	34	0.934	1.00	2.416	21.7	89.1	66	0.892	0.979
2	7200	6276	0.085	0.18	14.1	94.9	49	0.776	1.00	2.416	21.2	96.5	77	0.747	0.984
3	10800	8303	0.085	0.18	15.8	100.0	62	0.686	1.00	2.416	17.5	103.6	75	0.626	0.965

Client: **URS/ARUP/HMM JV**	Boring #: **S0028R**	Sample #: **MC12-2**
Project: **California High Speed Train**	Depth (ft): **60.5-61**	
Project #: **2636-001.0**	Soil: **Light olive brown sand**	

TEST REPORT: Direct shear - inundated, consolidated, & drained test
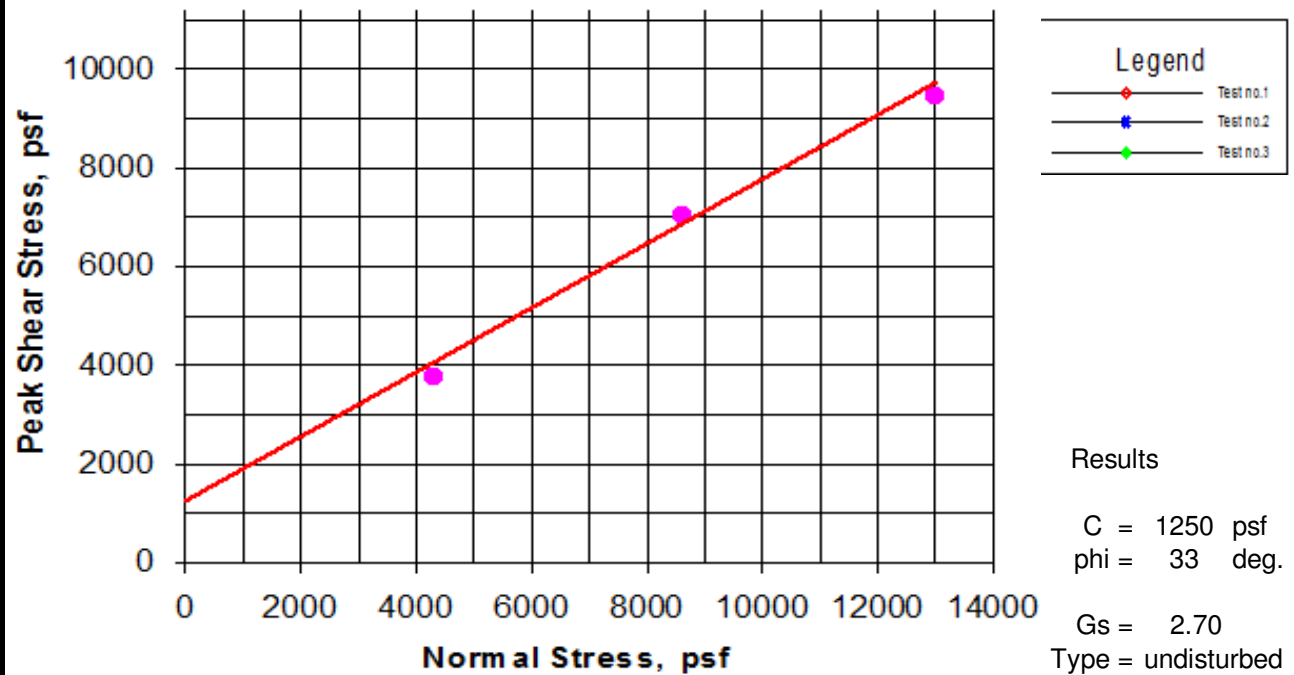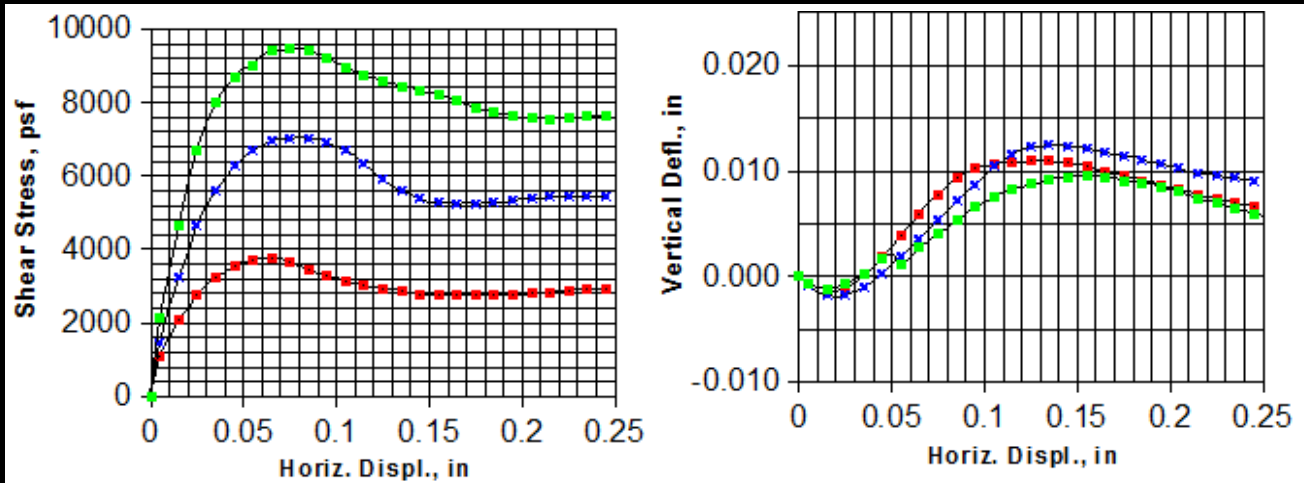
Inspection Services, Inc.

Plate no: _____

Direct Shear Moisture and Density Laboratory Results

wet density (pcf) =   131.3

dry density (pcf) =   119.4

moisture (%) =   9.9

Client: **URS/ARUP/HMM JV**	Boring #: **S0028R**	Sample #: **MC18-1**
Project: **California High Speed Train**	Depth (ft): **86-86.5**	
Project #: **2636-001.0**	Soil: **Olive brown sand**	
TEST REPORT: **Direct shear - inundated, consolidated, & drained test**		

Inspection Services, Inc.

Plate no: _____

Results

C = 1250 psf
phi = 33 deg.

Gs = 2.70
Type = undisturbed

Test no.	SigN psf	Peak Shear str., psf	Displ. in.	Strain Rate in./hr	Initial MC %	Initial DD pcf	Initial Sat. %	Initial Void Ratio	Initial Ht. in.	Initial Dia. in.	Final MC %	Final DD pcf	Final Sat. %	Final Void Ratio	Final Ht. in.
1	4300	3780	0.065	0.18	8.5	111.5	45	0.511	1.00	2.416	12.2	113.2	67	0.489	0.986
2	8600	7044	0.080	0.18	9.8	115.9	59	0.454	1.00	2.416	12.2	118.8	79	0.418	0.976
3	13000	9479	0.080	0.18	12.6	117.4	78	0.435	1.00	2.416	11.9	121.2	82	0.391	0.969

Client: **URS/ARUP/HMM JV**		Boring #: **S0028R**	Sample #: **MC18-1**
Project: **California High Speed Train**		Depth (ft): **86-86.5**	
Project #: **2636-001.0**		Soil: **Olive brown sand**	

TEST REPORT: Direct shear - inundated, consolidated, & drained test

Inspection Services, Inc.

Plate no: _____

COMPACTION TEST REPORT
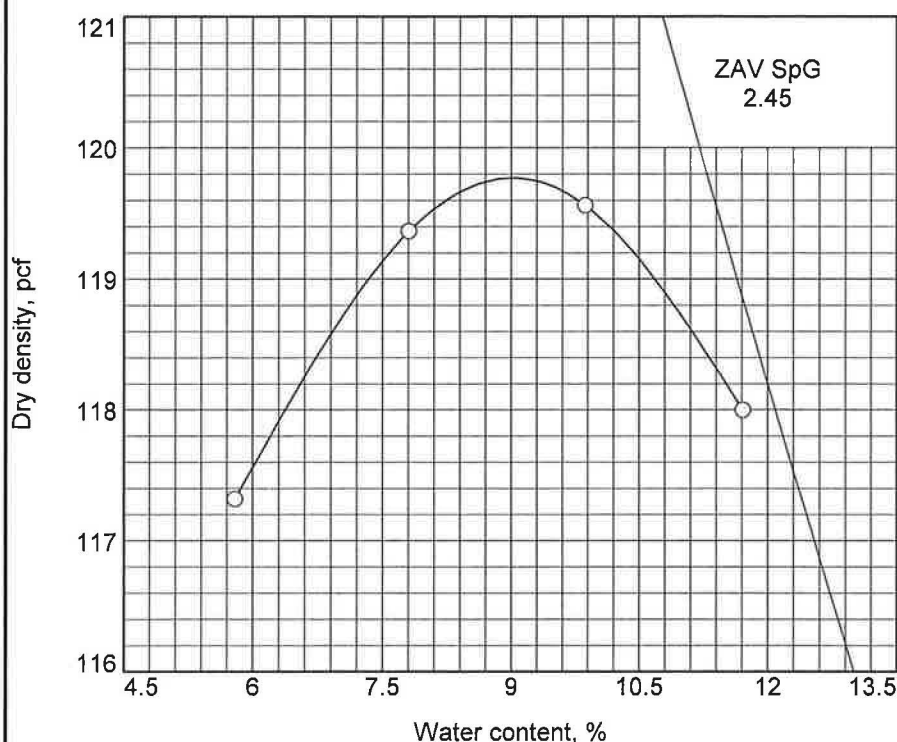
Curve No.
52573

Test Specification:
ASTM D 1557-91 Procedure B Modified

Hammer Wt.:	10 lb.
Hammer Drop:	18 in.
Number of Layers:	five
Blows per Layer:	25
Mold Size:	0.03333 cu. ft.

Test Performed on Material
Passing _3/8 in._ Sieve

Soil Data

NM		Sp.G.	
LL		PI	
%>3/8 in.	0	%<#200	12
USCS		AASHTO	

TESTING DATA

	1	2	3	4	5	6
WM + WS	6178.4	6219.1	6226.0	6109.0		
WM	4223.0	4223.0	4223.0	4223.0		
WW + T #1	570.3	668.0	638.3	555.1		
WD + T #1	529.0	608.0	571.4	524.7		
TARE #1	0.0	0.0	0.0	0.0		
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	7.8	9.9	11.7	5.8		
DRY DENSITY	119.4	119.6	118.0	117.3		

TEST RESULTS	Material Description
Maximum dry density = 119.8 pcf	Brown sand
Optimum moisture = 9.0 %	

Project No. 2636-001.0 **Client:** URS/ARUP/HMM JV
Project: California High Speed Train

○ **Source:** S-0028R G-52573 **Depth:** 0.0-5.0 **Sample No.:** B01

Remarks:

Figure

Tested By: LL   **Checked By:** LL/PH

R-Value ASTM D2844 / CT301

Project Name:	California High Speed Train	**ISI File No.:** 2636-001.0
Client Name:	URS/ARUP/HMM JV	**ISI Lab No.:** G-52573
Type of Material:	Brown sand	
Sampling Location:	S0028R	
Sample No.:	B-01 0.0 to 5.0 ft	

Test Date: 9/26/13
Run By: LL
Checked By: LL/PH

Specimen #	1		2		3	
Compaction Pressure [psi / kPa]	300	----	325	----	350	----
Total Moisture [%]	10.6		10.1		9.7	
Density[pcf]	119.8		120.4		121.3	
Expansion Pressure [psi / kPa]	0.00	0.00	0.00	0.00	0.00	0.00
Horizontal Pressure at 160 psi [psi / kPa]	32	221	28	193	25	172
Number of Turns D [-]	4.27		4.25		4.28	
Sample Height [in. / mm]	2.45	62.2	2.45	62.2	2.45	62.2
Exudation Pressure [psi / kPa]	101	696	336	2317	622	4289
R-Value [-]	70.1		73.5		75.9	
Corrected R-Value [-]	68.0		73.0		76.0	
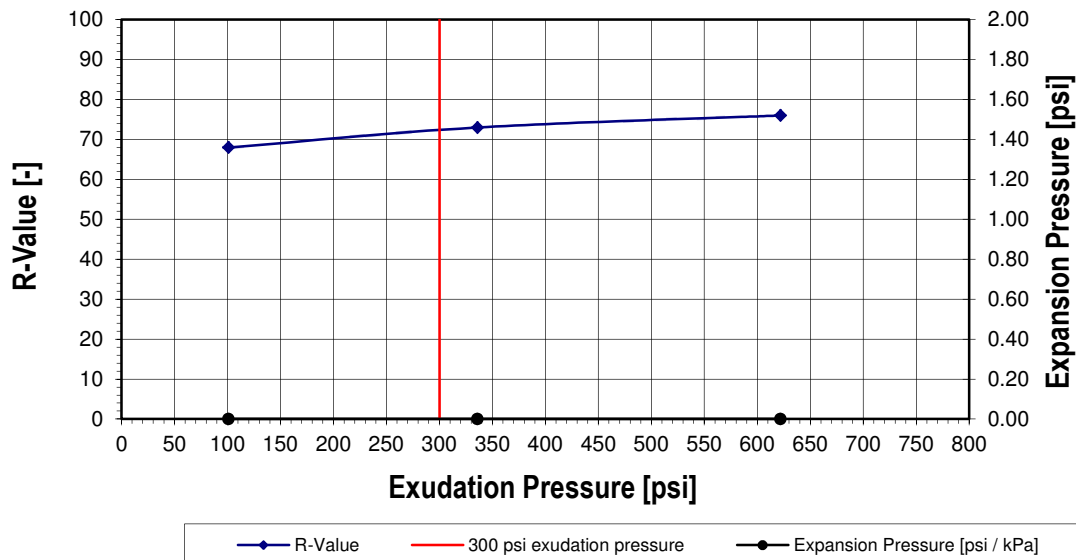
Corrected R-Value at 300 psi / 2.07 MPa Exudation Pressure = 72.0

Inspection Services, Inc. ■ Berkeley, San Francisco and Oakland ■ www.inspectionservices.net
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